

Laparoscopic approach of hepatocellular carcinoma in cirrhotic liver

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Abstract. Introduction: Liver resection represents a good choice for curing hepatocellular carcinoma (HCC) allowing a curative chance also in selected patients. The criteria for liver resectability by laparoscopy remains the same for open surgery. The minor liver resections for HCC can be safely conducted also in cirrhotic patients and that laparoscopy, when feasible, should be the approach of first choice. Case report: We describe a male patient, 64 years old, with a 3.6-cm-diameter HCC located at segments 6. Child-Pugh class A liver cirrhosis, obesity and diabetes mellitus as comorbidities were noted. The patient was diagnosed and treated for hepatitis C virus with interferon and then with IFN-free therapies, 5 years ago with normal AFP levels, the only preoperative malignancy criteria being imaging, ultrasound and CT exam. Results: The patient was placed in the supine position and 4 trocars were used for the procedure. Parenchymal transection was performed using a Habib laparoscopic device. The operation time was 45 min and estimated blood loss was 50 ml; blood transfusion was not required. Pathological examination confirmed a moderately differentiated HCC with all resected margins free of malignancy. Postoperative recovery was uneventful and the patient was discharged on the postoperative day 3. Conclusion Laparoscopic liver resection in obese patients may be performed as safely, with the same risk of postoperative complications as in non-obese patients and with lower operation times and levels of blood loss compared with non-obese patients in the context of advanced liver cirrhosis. Surveillance for HCC should be continued in this patients especially with diabetes mellitus and F4 liver fibrosis.

Key words: liver resection, laparoscopic hepatectomy, hepatocellular carcinoma, cirrhosis

INTRODUCTION

Hepatocellular carcinoma (HCC) is the most common primary cancer of the liver. The incidence of HCC has been on the rise and is associated with an increase in hepatitis B or C-associated cirrhosis. Approximately 80% of patients with HCC develop the tumor and the incidence of HCC in cirrhotic patients can be 8% per year depending on the cause of cirrhosis (1).

Laparoscopic surgery is now considered the gold standard in treatment for the majority of surgical pathologies. Cirrhotic patients constitute a high-risk population, and present a major challenge for the performance of minimally invasive liver resection. It is accepted that laparoscopic liver resection (LLR) is a safe procedure, with acceptable morbidity and mortality with favorable short-term and long-term outcomes even in cirrhotic patients (2,3).

CASE REPORT

A 64-year-old morbidly obese male patient with cirrhosis due to hepatitis C virus (HCV) infection and hepatic steatosis was referred to First Surgical Clinic at the St Spiridon University Hospital Iasi with a hepatic mass.

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Received: May 30, 2022; **Accepted June** 10, 2022; **Published September** 30, 2022

Citation: Vasilescu A., Bradea C., Tarcoveanu E, Ciortescu Irina, Fotea V., Crumpei Felicia, Batraneac Valeria, Sova Iuliana, Lupascu Cr.: Laparoscopic approach of hepatocellular carcinoma in cirrhotic liver. Journal of Surgery [Jurnalul de chirurgie]. 2022; 18(3): 231 - 235, DOI: 10.22551/JSURG.2022.03.07

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The patient's past medical history included laparoscopic cholecystectomy 5 years ago in our clinic, at the time he was diagnosed with Chronic Viral Hepatitis with HCV, alcoholic steatohepatitis, diabetes mellitus type 2 insulin-treated, hypertension grade III very high additional risk, diabetic retinopathy and mixed dyslipidemia. The patient is a former smoker, in withdrawal for 12 years.

In the Institute of Hepatogastroenterology (IGH) Iasi, an attempt was made to eradicate the hepatitis C virus (HCV) with antiviral therapy based on interferon (IFN), but with a partial virological response. In the following year, the treatment with IFN-free is introduced in Romania and the patient follows treatment with antiviral therapy: Exviera (dasabuvir) Viekirax (ombitasvir/paritaprevir/ritonavir). After the treatment it is obtained sustained virologic response (SVR) and currently viremia is undetectable.

The patient has a routine consultation in the Diabetes, Nutrition and Metabolic Diseases where abdominal ultrasound discovered in segment VI hyperechoic nodular mass with hypoechoic halo, 2.4 cm diameter (Fig. 1). A CT exam with contrast described a nodular image 26.5/17 mm located in the subcapsular segment VI, hypodense, natively inhomogeneous (with lipid inclusions in the periphery and discretely hyperdense spontaneously centrally), without typical arterial flash appearance, with moderate uptake of contrast in portal time at the level of the central component, without significant wash-out in the equilibrium phase and α -fetoprotein (AFP) level was 4.31 IU/ml.

The patient was admitted in IGH Iași. Fibroscan revealed CAP 352 (S3) and F4 cirrhosis. The liver function was classified as Child-Pugh class A. MRI exam with contrast characterized the lesion: at the level of seg VI a nodular formation with discrete hypersignal T2, hyposignal T1 with heterogeneous structure with a signal component of fatty type and one with contrast uptake in arterial time, outlining the peripheral pseudocapsule in late time, with global dimensions of 27/20 mm, lesion with imaging

characteristics of malignancy, suggesting hepatocarcinoma (Fig 2).

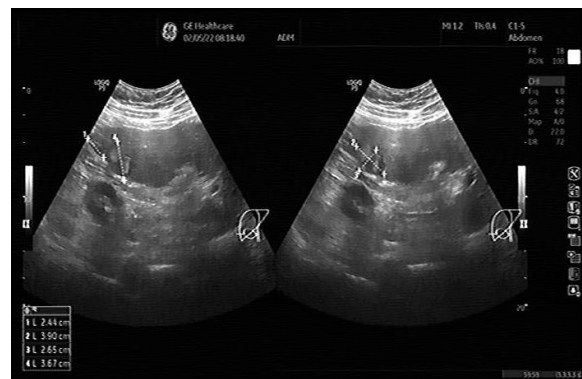


Fig.1 Abdominal ultrasound discovered in segment VI hyperechoic nodular mass with hypoechoic halo, 2.4 cm diameter.

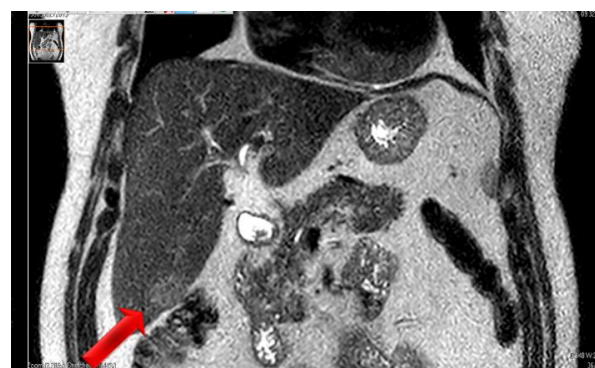
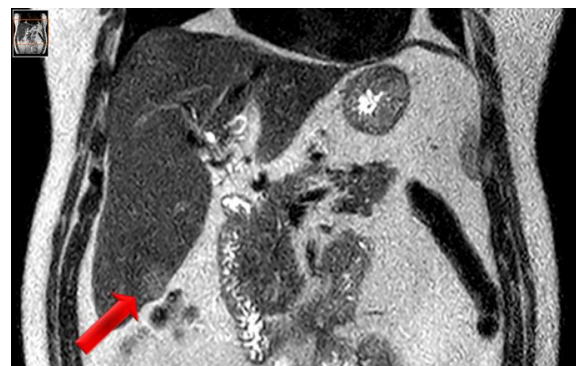


Fig. 2 MRI exam with contrast: at the level of segment VI a nodular formation with imaging characteristics of malignancy, suggesting hepatocarcinoma.

The patient was admitted in our surgical clinic. The patient's body mass index (BMI) was 42 kg/m², the American Society of Anesthesiologists' classification of preoperative risk was III. Clinical exam of the abdomen was normal and biologically the patient had hyperglycemia, hypercholesterolemia, hypertriglyceridemia.

The patient underwent laparoscopic resection of liver tumor. He was placed in the supine position and 4 trocars were used for the procedure. Parenchymal transection was performed using a Habib laparoscopic device (Fig. 3). The operation time was 45 min and estimated blood loss was 50 ml; blood transfusion was not required.

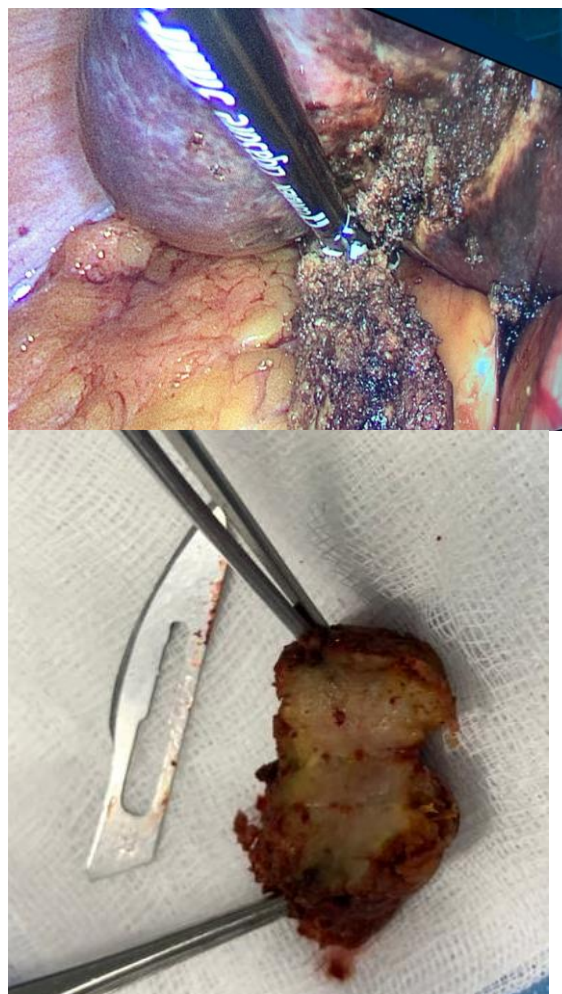
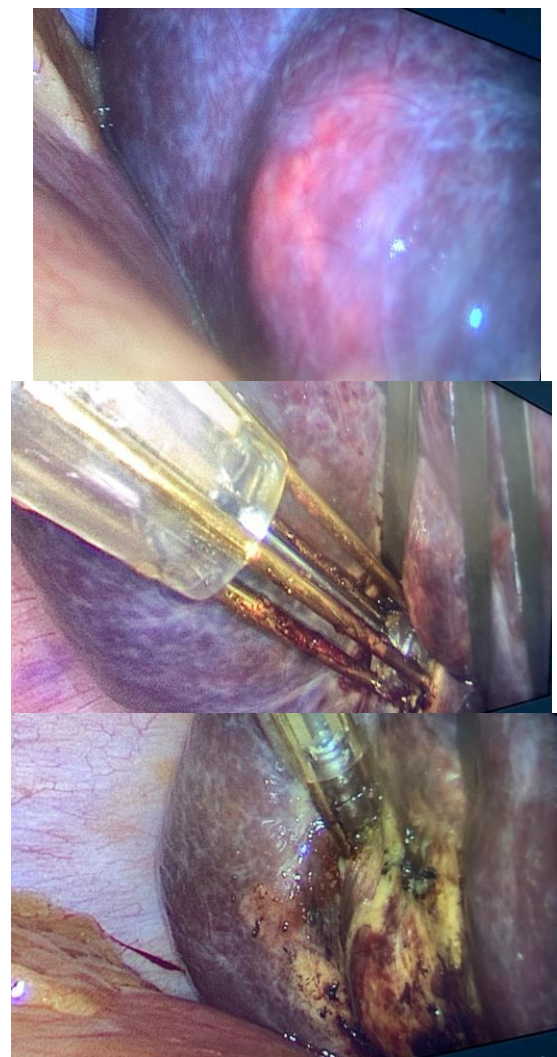


Fig. 3 Laparoscopic resection of liver tumor performed using a Habib laparoscopic device – intraoperative view.

Histology and immunohistochemistry confirmed a moderately differentiated HCC with all resected margins free of malignancy (R0 resection), without vascular or lymphatic invasion [stage pT1b G2 L0V0Pn0, according to the tumor-lymph nodes-metastasis (TNM) staging system].

Postoperative recovery was uneventful and the patient was discharged on the postoperative day 3. One year postoperatively, the patient remains disease-free and in excellent condition.

DISCUSSION

Hepatocellular carcinoma (HCC) can develop in patients with chronic hepatitis C after

they have achieved a sustained virologic response (SVR) to antiviral therapy, that is eradication of hepatitis C virus (HCV). Thus, surveillance for HCC remains necessary after SVR. Patients with diabetes mellitus and patients with the elevation of F4 index are at higher risk of HCC after SVR. Toyoda et al discover an incidence rate of HCC 1.2% at 5 years and 4.3% at 10 years (4).

The directly acting antivirals (DAA) has determined a showy change in the management of hepatitis C virus (HCV) infection, the most common cause of hepatocellular carcinoma (HCC). In the literature exist studies who suggested an increased risk of HCC after IFN free treatments and the mechanism evoked to explain is the deregulation of antitumor response, following the sudden decrease of HCV viral load, due to immune subversion which could favor the progressive development of pre-existing neoplastic clones. Curing HCV infection does not eliminate the possibility of ongoing liver disease and HCC (5). The sustained virological response achieved after a DAA treatment seems to reduce HCC incidence, as demonstrating by Calvaruso et al. (6).

For the patients suffering from liver cirrhosis complicated with HCC liver transplantation is potentially curative, but exist various limitations such as continued alcohol abuse associated, as well donor availability and patient age. Liver resection is an alternative option and is now widely accepted as a potentially curative treatment for patients with HCC (7).

Morbid obesity is associated with worse postoperative outcomes due to correlated comorbidities, as well as technical intraoperative difficulties. The hepatic resections in obese patients may be safely performed with no additional risk compared with non-obese patients, but laparoscopic liver resection presents a surgical challenge and today is not considered to be a contraindication BMI does not negatively affect the postoperative short-term outcomes despite higher rates of diabetes mellitus, hypertension, and ischemic heart disease with an increase in BMI, no significant difference in operative time, blood loss, and conversion rate as in the case of our patient. Therefore, obesity and

overweight should not be a contraindication for LLR (8). Uchida et al show that BMI had influenced to surgical outcomes of open liver resection and LLR was less influenced by BMI and had great benefit in obese patients (9).

The laparoscopic resection of hepatocellular carcinoma in patients with cirrhosis is safe and may provide improved patient outcomes when compared to the open technique. If for major hepatectomy further studies seem to be required, especially for long-term oncological results, laparoscopic minor hepatectomy become a common alternative to open liver surgery, is feasible and secure but requires a trained team with experience in minimally invasive surgery (10). There are now few published studies on LLR for a morbidly obese patient with liver cirrhosis, as in our case with a BMI of 42 kg/m².

Liver resection for patients with cirrhosis remains a challenging operation. The number of laparoscopic hepatectomy has been growing and many studies have reported favorable results for patients with hepatocellular carcinoma (HCC), but favorable outcome may be achieved if the patients are carefully selected and carried out in high volume centers (11).

For unresectable tumors radiofrequency ablation (RFA) is one of the best alternative treatments for hepatocellular carcinoma in selected patients, and this procedure can be applied either percutaneously or laparoscopically. RFA with laparoscopic guidance is highly recommended because recent advances in laparoscopic ultrasound have widened the indication for laparoscopic ablation (12).

CONCLUSION

LLR in obese patients may be performed as safely as in non-obese patients, with the same risk of postoperative complications and with, additionally, lower operation times and levels of blood loss compared with non-obese patients in the context of advanced liver cirrhosis. Surveillance for HCC should be continued in this patient especially with diabetes mellitus and F4 liver fibrosis.

Funding: The work did not use financial resources involving any company or institution.

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

Data Availability Statement: The data published in this research are available on request from the first author and corresponding authors.

Conflicts of Interest: The authors declare no conflict of interest.

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